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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/912,214	07/24/2001	David M. Filgas	GSIL0169PUS	6400

7590

04/24/2002

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EXAMINER

INZIRILLO, GIOACCHINO

ART UNIT

PAPER NUMBER

2828

DATE MAILED: 04/24/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/912,214	FILGAS, DAVID M.	
	Examiner	Art Unit	
	Gioacchino Inzirillo	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Paul IP

PAUL IP
 SUPERVISORY PATENT EXAMINER
 TECHNOLOGY CENTER 2800

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 27 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 27 is indefinitely referring to the embodiment of Figs. 10a – 10d. These figures clearly show two components, whereas the claim does not recite two components. The claim recites, “the device acts as a pair of waveguides” and does not say there are two waveguides. Therefore, according to the wording there should only be one waveguide. Correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1 – 4, 6, 9, 11 – 17, 19, 21, 24, 25, 29, 30, 31 and 32 are rejected under 35 U.S.C. 102(a) as being anticipated by Meissner et al. US 6,160,824 (herein after known as Meissner). Meissner discloses a waveguide device that acts as a waveguide in at least one direction. Column 3 lines 64 – 65 discloses the invention can be used as a laser or an amplifier. Fig. 2 of Meissner shows

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the basic structure in an embodiment of his invention where a single member planar core 22 is sandwiched between inner cladding layers 24. Both the core 22 and cladding layers 24 are sandwiched by outer cladding layers 26. Fig. 10 shows an embodiment where the waveguide is optically pumped by a pump source 108 on the at least one pump surface, and the output exits from the at least one output surface. Column 10 lines 41 – 58 teach the core material of the Meissner invention. Therein he teaches that the core contains an optically active species, and an optically inert host material. For example, Meissner lists that the passive core member may be a may be YAG crystalline lattice, and the active member may be Neodymium doped into the host. He also discloses in column 13 lines 44 – 48 that his device has a sapphire substrate, the cladding is undoped YAG and the core is doped YAG. Mode control is provided by careful design of the core. Column 4 lines 3 – 6 teaches that the thickness of the laser medium core, will effect the lasing mode, and that the thickness of the core in the Meissner invention will be appropriate for the generation and propagation of a low order transverse mode in the waveguide dimension. Means for beam confinement are also taught. Column 12 lines 56 – 57 teach that the end 21 is the high reflectivity end, and that the end 23 is an output coupler end. These ends must have optical coatings on them to have these properties, and hence the must be in contact with a surface of the core. Column 9 lines 46 – 49 disclose that the pump side has a NA of .5, which is grater than 0.05.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5, 7, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meissner as applied to claims 1 – 4, 6, 9, 11 – 17, 19, 21, 24, 25, 29, 30, 31 and 32 above, and further in view of Byren et al. US 5,974,061 (herein after known as Byren). Meissner fails to teach a cladding pumped waveguide solid-state laser. However, Byren teaches such a pumped laser in Fig. 1 of his patent. Reference numeral 16 denotes the gain medium, and reference numeral 14 denotes the cladding; this may be better illustrated in Fig. 2. Fig. 2 shows how the cladding 14 is in contact with the gain medium 16. Turning back to Fig. 1 of Byren, we see optical pump sources 26 pumping the medium 16 through the cladding via the input end 32. Therefore, it would be obvious to one of ordinary skill in the art to modify Meissner as taught by Byren since it would allow for transverse pumping of the gain medium by pump sources located on two sides, for Fig. 3 illustrates better that this is possible. This pumping configuration will provide more control over the pump volume, and higher pump beam power for more output laser beam power. Furthermore, column 1 lines 40 – 52, in describing general properties of waveguides states that the guiding layer (core) has a higher reflective index than the cover layer (cladding) and the substrate. He also discloses in column 13 lines 44 – 48 that in his device the cladding is undoped YAG.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Meissner as applied to claims 1 – 4, 6, 9, 11 – 17, 19, 21, 24, 25, 29, 30, 31 and 32 above, and further in view of

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Largent US 5,371,757 (herein after known as Largent). Meissner fails to teach a grating mode controller. However, Largent teaches in column 4 lines 61 – 63 that gratings can be used for longitudinal mode control. Therefore, it would be obvious to one of ordinary skill in the art to modify the Meissner invention by adding a grating to control the longitudinal modes as taught by Largent.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Meissner as applied to claims 1 – 4, 6, 9, 11 – 17, 19, 21, 24, 25, 29, 30, 31 and 32 above, and further in view of Byer et al. US 4,310,808 (herein after known as Byer). Meissner fails to teach a cylindrical shaped gain medium. However, they are well known in the art, and the Examiner offers Byer as proof. Fig. 1 of Byer shows what is described in the ABSTRACT as an Nd:YAG rod. As all those of ordinary skill in the art would know, a rod is cylindrical.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Meissner. Meissner does not teach an NA of less than 0.22, but talks about the NA in column 9 lines 46 – 54. Controlling the NA to optimize the output would be obvious to one of ordinary skill, and would furthermore require only routine skill in the art.

Claims 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meissner as applied to claims 1 – 4, 6, 9, 11 – 17, 19, 21, 24, 25, 29, 30, 31 and 32 above, and further in view of Hargis et al. US 5,574,740 (herein after known as Hargis). Meissner fails to teach a gain

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medium with differing properties. However, Hargis teaches such a gain medium in Fig. 1, where it acts as two waveguides. Therefore, it would be obvious to one of ordinary skill in the art to modify the gain medium of Meissner as taught by Hargis.

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Meissner as applied to claims 1 – 4, 6, 9, 11 – 17, 19, 21, 24, 25, 29, 30, 31 and 32 above, and further in view of Muendel US 5,533,163 (herein after known as Muendel). Meissner fails to teach a wave guiding fiber. However, Muendel teaches such a fiber in Fig. 13. Therefore, it would be obvious to one of ordinary skill in the art to modify Meissner as taught by Muendel.

Prior Art

The following US patents are being made of record, even though they were not relied upon in this Office Action, for being similar in subject matter, and may be relied upon in any future Office Actions: 5327444 and 5852622.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gioacchino Inzirillo whose telephone number is 703-305-1967. The examiner can normally be reached on M-F 8:30AM to 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on 703-308-3098. The fax phone numbers for the organization where this application or proceeding

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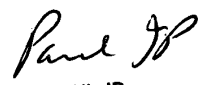
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is assigned are 703-308-7722 for regular communications and 703-308-7721 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Gioacchino Inzirillo
Examiner
Art Unit 2828
April 21, 2002


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